

## AMENDMENTS TO THE CLAIMS

The following **Listing of Claims** replaces all prior versions and listings of claims in this application.

1. (Currently Amended) ~~In an electronic device having an acoustic echo canceller and being capable of implementing audio applications and at least one of a conferencing application and a telephony application having a first sampling rate, a background training method for the acoustic echo canceller, the~~ A method comprising ~~the step of:~~

implementing a telecommunications application of an electronic device, said electronic device comprising one of a personal computer and a peripheral device for use with personal computers;

sampling a telecommunications signal of said telecommunications application at a first sampling rate; and

utilizing sound output of an entertainment sound adapter of said electronic device, said entertainment sound adapter output being sampled comprising program audio at a second higher sampling rate than said first sampling rate, said entertainment sound adapter output corresponding that corresponds to a non-training audio application of said electronic device to train the an acoustic echo canceller in a background of said telecommunications application.

2. (Currently amended) The method of claim 1, wherein the non-training audio application is an entertainment application, said entertainment sound adapter output that, at the least, includes program audio, and said entertainment application was not designed solely for ~~the purpose of training the acoustic echo canceller.~~

3. (Currently amended) The method of claim 2 ~~4~~, wherein the entertainment sound adapter output comprising program audio ~~of the second sampling rate of the entertainment non-training audio application corresponds to one of a streaming audio sound, a Moving Picture Experts Group Layer 3 Audio (MP3) playback, a Compact Disk (CD) playback, a Digital~~

~~Versatile Disk (DVD) playback, a radio program, and a video game having audio associated therewith.~~

4. (Currently amended) The method of claim 1, wherein the electronic device is ~~one of~~ asaid personal computer and said non-training audio application of said electronic device ~~comprises an entertainment application of said personal computer, a portable computing device, and an advanced multipurpose phone.~~

5. (Currently Amended) The method of claim 1, wherein ~~said~~ utilizing ~~step~~ comprises ~~the step of~~ performing sample rate conversion to match the second higher sample rate of the non-training audio application with the first sampling sample rate of the one of the conferencing application and the telephony telecommunications application.

6. (Currently amended) The method of claim 1, wherein said electronic device includes ~~at least one~~ a microphone and ~~at least one~~ a speaker, the acoustic echo canceller includes an adaptive filter, a first path is formed from the ~~at least one~~ speaker to the adaptive filter and a second path is formed from the ~~at least one~~ microphone to the adaptive filter, and said utilizing ~~step~~ comprises ~~the step of~~ matching a delay of the first path with a delay of the second path.

7. (Currently amended) The method of claim ~~6~~ 4, wherein ~~the~~ said electronic device includes ~~at least one~~ a processor, and ~~said~~ utilizing ~~step~~ further comprises ~~the step of~~ minimizing use of the ~~at least one~~ processor when a current load of the ~~at least one~~ processor is above a ~~given~~ an average processor load threshold for the processor.

8. (Currently amended) The method of claim 7, wherein ~~the electronic device includes~~ at least one microphone and at least one speaker, and said acoustic echo canceller includes an adaptive filter, and said minimizing step comprises the steps of collecting audio data samples from ~~at least one of the at least one microphone and the at least one speaker~~ but and restricting use of the adaptive filter until the current load of the ~~at least one~~ processor is below the ~~given~~ average processor load threshold for the processor.

9. (Currently amended) The method of claim 8, wherein ~~said~~ restricting ~~step~~ comprises the steps of:

utilizing an adaptive counter to count a number of training calls to the acoustic echo canceller; and

training the adaptive filter only when the number of training calls is greater than an adaptive filter comparison threshold.

10. (Currently amended) ~~In an electronic device having an acoustic echo canceller and being capable of implementing audio applications and at least one of a conferencing application and a telephony application, a background training method for the acoustic echo canceller, A the method comprising the step of:~~

utilizing sound output of an entertainment sound adapter of an electronic device comprising one of a personal computer and a peripheral device for use with personal computers, said entertainment sound adapter output comprising audio that corresponds to a non-training audio application of said electronic device, to train said entertainment sound adapter output being utilized for training the an acoustic echo canceller of said electronic device in a background of a telecommunications application of said electronic device, wherein the entertainment sound adapter output that corresponds to the non-training audio application of said electronic device is a notification of an a pre-specified event unrelated to training of the acoustic echo canceller and comprises one of a specially designed audio signal or sequence of frequencies including frequencies necessary to train the acoustic echo canceller.

11. (Currently amended) The method of claim 10, wherein the ~~pre-specified~~ event is one of an incoming call, an incoming e-mail message, an upcoming conference, an upcoming meeting, an error, a warning, and a request for input.

12. (Currently amended) ~~An acoustic echo canceller for use in an electronic device that is capable of implementing audio applications and at least one of a conferencing application and a telephony application having a first sampling rate, the acoustic echo canceller comprising:~~

an entertainment sound adapter of an electronic device, said electronic device comprising one of a personal computer and a peripheral device for use with personal computers, said electronic device having a telecommunications application involving sound sampled at a first sampling rate, and

an adaptive filter adapted to be trained using sound comprising ~~program~~ audio output of said entertainment sound adapter of said electronic device sampled at a second, higher sampling rate, wherein said audio output of said entertainment sound adapter ~~that~~ corresponds to a non-training audio application for training said adaptive filter in a background of said telecommunications application.

13. (Currently amended) The acoustic echo canceller of claim 12, wherein the non-training audio application is an application that, ~~at the least,~~ includes program audio, and was not designed solely for ~~the purpose of training~~ the acoustic echo canceller.

14. (Currently amended) The acoustic echo canceller of claim ~~13~~ 12, wherein the non-training audio application comprising program audio corresponds to ~~one of a~~ streaming audio and said non-training audio application comprises an entertainment application of said electronic device different from said telecommunications application of said electronic device, a Moving Picture Experts Group Layer 3 Audio (MP3) playback, a Compact Disk (CD) playback, a Digital Versatile Disk (DVD) playback, a radio program, and a video game having an audio associated therewith.

15. (Currently amended) The acoustic echo canceller of claim 12, wherein the electronic device is ~~one of a~~ said personal computer, ~~a portable computing device, and an advanced multipurpose phone.~~

16. (Currently amended) The acoustic echo canceller of claim 12, further comprising ~~at least one~~ sample rate conversion device for performing sample rate conversion to match the second higher sample rate of the non-training audio application with the first sampling sample rate of the telecommunications ~~one of the conferencing application and the telephony~~

application, said telecommunications application being different from said non-training audio application of said electronic device.

17. (Currently amended) The acoustic echo canceller of claim 12, wherein the electronic device includes ~~a at least one~~ microphone and ~~a at least one~~ speaker, a first path is formed from the ~~at least one~~ speaker to the adaptive filter and a second path is formed from the ~~at least one~~ microphone to the adaptive filter, and the acoustic echo canceller further comprises ~~a at least one~~ delay matching buffer for matching a delay of the first path with a delay of the second path.

18. (Currently amended) The acoustic echo canceller of claim 12, wherein said electronic device includes ~~a at least one~~ processor, and the acoustic echo canceller further comprises means for minimizing use of ~~the at least one~~ processor when a current load of the ~~at least one~~ processor is above ~~a given~~ an average processor load threshold of the processor.

19. (Currently amended) The acoustic echo canceller of claim 18, wherein the electronic device includes ~~a at least one~~ microphone and ~~a at least one~~ speaker, the acoustic echo canceller further comprises:

means for collecting audio data samples from ~~at least one~~ of the ~~at least one~~ microphone and the ~~at least one~~ speaker; and

means for restricting use of the adaptive filter until the current load of the ~~at least one~~ processor is below the ~~given~~ average processor load threshold of the processor.

20. (Currently amended) The acoustic echo canceller of claim 19, wherein said means for restricting comprises:

an adaptive counter for counting a number of training calls to the acoustic echo canceller;

~~a comparison~~means for comparing the number of training calls to ~~ana pre-specified~~ adaptive filter comparison threshold, and

wherein the adaptive filter is trained only when the number of training calls is greater than the ~~pre-specified~~ adaptive filter comparison threshold.

21. (Currently amended) ~~An acoustic echo canceller for use in an electronic device that is capable of implementing audio applications and at least one of a conferencing application and a telephony application, the acoustic echo canceller comprising:~~

an adaptive filter adapted to be trained using sound comprising audio that corresponds to a non-training audio application; and

an entertainment sound adapter of an electronic device coupled to said adaptive filter for outputting audio sound of said non-training audio application;

wherein the output audio sound that corresponds to the non-training audio application is a notification of an event unrelated to training of the acoustic echo canceller and comprises ~~one of a specially designed audio sound and a sequence, the specially designed audio sound or sequence of frequencies~~ including frequencies ~~necessary to train the acoustic echo canceller.~~

22. (Previously presented) The acoustic echo canceller of claim 21, wherein the event is one of an incoming call, an incoming e-mail message, an upcoming conference, an upcoming meeting, an error, a warning, and a request for an input.

23. (Currently amended) ~~A background training method for an acoustic echo canceller included in a peripheral device, the peripheral device capable of implementing audio applications and further including at least one of a Universal Serial Bus (USB) interface and a IEEE 1394 interface for connecting to a computer capable of implementing at least one of a conferencing application and a telephony application having a first sampling rate, the method comprising the step of:~~

implementing a telecommunications application of a computer having a telecommunications signal sampled at a first sampling rate;

receiving sound output of an entertainment sound adapter from the computer at an acoustic echo canceller in a peripheral device of said computer via ~~at least one of a the~~ USB interface and an the IEEE 1394 interface between said computer and said peripheral device, the entertainment sound adapter output corresponding to a non-training audio application, said

entertainment sound adapter output being sampled at a second sampling rate, said second sampling rate being higher than said first sampling rate;

utilizing the entertainment sound adapter output that corresponds to the non-training audio application to train the acoustic echo canceller in the peripheral device in a background of said telecommunications application; and

performing echo canceling, during ~~at least one of the~~ telecommunications conferencing application and the telephony application implemented by the computer, using the acoustic echo canceller in the peripheral device.

24. (Currently amended) The method of claim 23, wherein the non-training audio application is an entertainment application that, ~~at the least~~, includes program audio, and was not designed solely for ~~the purpose of~~ training the acoustic echo canceller.

25. (Currently amended) The method of claim 23, wherein the entertainment sound adapter output that corresponds to the non-training audio application is a notification of ~~an a pre-specified~~ event unrelated to training of the acoustic echo canceller and comprises ~~one of a specially designed audio sound or sequence~~ of frequencies including frequencies ~~necessary~~ to train the acoustic echo canceller.

26. (Currently amended) The method of claim 25, wherein the ~~pre-specified~~ event is one of an incoming call, an incoming e-mail message, an upcoming conference, an upcoming meeting, an error, a warning, and a request for an input.

27. (New) The method of claim 1, wherein said electronic device comprises a processor, the method further comprising

operating said non-training audio application for training the acoustic echo canceller so long as a processing load on said processor of said electronic device is less than an average load of said processor of said electronic device.